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Gray Davis
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January 25, 2002 Mail-Out #MSC-02-02

TO: All Interested Parties

SUBJECT: PUBLIC WORKSHOP REGARDING THE DIESEL EMISSION CONTROL STRATEGY VERIFICATION PROCEDURE FOR ON-ROAD, OFF-ROAD, AND STATIONARY DIESEL-FUELED VEHICLES AND EQUIPMENT

Background: In August 1998 the Air Resources Board (ARB or Board) identified particulate matter (PM) from diesel-fueled engines as a toxic air contaminant. Following that determination, ARB formed a Diesel Advisory Committee with a wide variety of stakeholders to develop a Diesel Risk Reduction Plan.

In recognition of the important role that diesel emission control strategy will have in reducing public exposure to diesel PM, ARB has developed interim procedures to verify the emission reduction claims of diesel emission control strategies (Diesel Emission Control Strategy Verification Procedure). ARB's role is to determine if a given diesel emission control strategy's emission reductions are real and durable, to establish the emission reduction level, to verify that the diesel emission control strategy has had successful field experience, and to investigate any secondary emissions of concern.

In July 2000 ARB staff issued the interim diesel emission control strategy verification procedure. In May and September of 2001, ARB staff conducted workshops to gather comments on the interim diesel emission control strategy procedure. The development of the diesel emission control strategy verification procedure is an on-going process, and ARB has been worked closely with all stakeholders to ensure the diesel emission control strategy procedure is technically sound and feasible. Since the last workshop in September 2001, staff has received further comments from interested stakeholders and has made additional revisions and clarifications to the draft procedure, presented in Attachment 1.

Workshop: ARB staff will hold a public workshop to discuss the revised draft requirements for verifying emissions reductions from diesel emission control strategies. Issues to be discussed include the process of the diesel emission control strategy verification procedure, test requirements, and reporting requirements.

Date: February 20, 2002
Time: 1:30 p.m.
Location: Annex IV Auditorium
9530 Telstar Avenue
El Monte, California

Revisions to the Diesel emission control strategy Verification Procedure: The draft regulatory language for the diesel emission control strategy verification procedure is attached. Some major changes are highlighted below:

1. Verification Levels: Previously, the Diesel Emission Control Strategy Verification Procedure had a system for categorizing PM diesel emission control strategies into three reduction levels: 30 to 60 percent, 60 to 85 percent, and 85 percent or more (or 0.01 g/bhp-hr). We propose slightly modifying these levels as follows:

Category	PM Reduction
Level 1	≥ 25 but < 50 percent
Level 2	≥ 50 but < 85 percent
Level 3	≥ 85 percent, or 0.01 g/bhp-hr

This modification is proposed in order to broaden the spectrum of technologies that ARB will consider in its diesel emission control strategy efforts, such as diesel oxidation catalysts (a number of which have been certified under other programs to achieve 25 percent PM reductions). As noted in the mail-out for the previous workshop, we are proposing a multi-level approach to the verification procedure, but we are not deviating from our goal to achieve the maximum reduction in diesel PM emissions that is economically and technologically feasible.

2. Verification of Oxides of Nitrogen (NOx) Reductions: Staff has provided further information on evaluation of NOx reductions. ARB will recognize NOx reductions as low as 15 percent with a greater number of tests required than at the 25 percent level to demonstrate measured reductions are real. Staff's goal is to consider as wide a range of NOx reduction technologies as possible while still ensuring real, measurable reductions.

3. Chassis Testing for On-Road Applications: Staff has received comments that the New York Bus Cycle (NYBC) may not be appropriate for some vehicles, such as those with manual transmissions. To address this issue, staff proposes a more general requirement calling for a transient cycle with long idle periods, low speed,

and steep accelerations from idle, such as, but not limited to, the NYBC itself. Manufacturers may propose alternative cycles that meet these conditions subject to ARB approval.

4. Durability Demonstration Requirements: After having received numerous comments from manufacturers of emission control systems and engines that the procedure's durability requirements were overly burdensome, staff proposes to reduce the durability period for on-road applications to 50,000 miles or 1,000 hours. Similarly, staff proposes to reduce the durability periods for off-road and stationary applications to 1,000 hours and stationary emergency generator to 500 hours.

5. Minimum warranty period: To partially compensate for a reduced durability test period, staff proposes increasing the minimum warranty period to equal that of the original durability periods (e.g., 150,000 miles or five years for heavy heavy-duty vehicles).

6. Conditional Verification: In light of the proposed durability period reductions, staff proposes eliminating conditional verification for on-road applications, but retaining it for stationary and off-road applications because of the smaller populations and the necessity to encourage speedy implementation.

7. Field Demonstration: To avoid a diesel emission control strategy being verified without any substantial field demonstration, staff proposes requiring a field demonstration of at least 10,000 miles or 200 hours (100 hours for the stationary emergency generator) if durability is otherwise demonstrated only in the laboratory.

8. In-Use Compliance Testing Requirements: In-use compliance testing in this context does not refer to mechanisms for ensuring that a given engine has a functioning diesel emission control strategy in place. Rather, staff's intention is that in-use compliance testing will serve to ensure that production of diesel emission control systems are consistent with verified designs.

   Staff proposes an in-use testing program consisting of two phases of testing and a representative sample of diesel emission control systems (between four to ten) will be tested at each phase. At Phase 1, manufacturers must procure diesel emission control systems that have been operated for at least one year or three months within its first maintenance, whichever comes first. At Phase 2, manufacturers must procure diesel emission control systems that have been operated between 60 to 80 percent of their minimum warranty period. All in-use testing must follow the same requirements for the emission reduction testing. In order to pass the in-use testing, diesel emission control systems must achieve at least 90 percent of the original verified emission reduction level. For each failing diesel emission control system,

two additional diesel emission control strategies must be tested to a maximum of ten. If at least seven out of ten diesel emission control systems pass the in-use testing, the diesel emission control systems are in compliance. The verification can be downgraded to a lower level or canceled if diesel emission control systems are not in compliance. This program is similar to an in-use testing program for the general retrofit protocol being considered by the United States Environmental Protection Agency.

9. Alternative Diesel Fuels: The term "alternative diesel fuels" refers to liquid fuels for diesel engines that involve modifications to standard diesel fuel (such as with water emulsifications) or are derived from nontraditional sources (such as biodiesel or Fischer-Tropsch diesel fuel). ARB proposes to extend the scope of the diesel emission control strategy verification procedure to include the verification of alternative diesel fuels. In general, these fuels must meet the same requirements as hardware-based diesel emission control systems for emission testing, durability testing, field demonstration, and warranty, with the exception that a greater number of test runs is called for because of the high test-to-test variability. Alternative diesel fuels must not cause any net increase of exhaust emissions for hydrocarbon, carbon monoxide, nitrogen dioxide (NO_2), nitric oxide (NO), and PM relative to California low-sulfur diesel fuel (15 parts per million by weight of sulfur). All alternative diesel fuels must first be registered with the U.S. EPA's Fuel Registration Program before they can be sold in California.

10. Fuel Additives: In addition to alternative diesel fuels, the procedure will also address fuel additives. ARB proposes that fuel additives be allowed only when used in conjunction with a particulate filter, unless it is demonstrated to Executive Officer's satisfaction that a filter is not needed. ARB intends to periodically review toxicology, epidemiology, and other health-related data and may revoke the verification of a fuel additive if data indicate a potential health or environmental risk associated with its use.

NO_2 Limit for Diesel Emission Control Strategy: As discussed at the third meeting of the International Diesel Retrofit Advisory Committee in October 2001, ARB is concerned about the increase in NO_2 emissions observed with a number of diesel emission control systems. Some diesel emission control systems oxidize NO to NO_2 to assist with the oxidation of PM and consequently emit NOx that has a significantly higher fraction of NO_2. Staff requests comments on an NO_2 limit in the verification procedure.

Interim Diesel Emission Control Strategy Verification: The ARB continues to review verification requests for the interim period before the diesel emission control strategy verification procedure is presented to the Board. The ARB has already verified some diesel emission control strategies, and encourages all interested manufacturers to

participate. It should be stressed that staff is considering existing data in its evaluation of diesel emission control strategy in this interim period.

To begin the verification process, a manufacturer must contact ARB staff to discuss its product and its plan to meet the verification requirements. If the diesel emission control strategy is to be used on a certified engine, the manufacturer will also need to apply for a Vehicle Code 27156 exemption. The exemption allows sales and installation of the reviewed diesel emission control strategy in the State of California (without confirming any emission reduction claims).

To expedite review, the manufacturer's application should follow the format shown in Section 2702 (d) of the draft diesel emission control strategy verification procedure. If ARB determines that the diesel emission control strategy meets the minimum requirements, the manufacturer will be provided with verification of emission reductions in the form of a letter. The verification letter states the ARB has reviewed and verified the claims of emission reductions based on data provided for the diesel emission control strategy.

ARB staff are available to discuss all the requirements described in the procedure and to provide feedback on the manufacturer's test plan to ensure that the necessary data for the verification process are obtained.

Manufacturers that wish to participate in the verification process should mail applications to:

Air Resources Board
Heavy-Duty Diesel In-Use Strategies Branch
Mobile Source Control Division
9528 Telstar Avenue
El Monte, California 91731
Attention: Ms. Annette Hebert, Chief

Written Comments: Staff encourages written comments regarding the diesel emission control strategy verification procedure. To ensure that any confidential information be handled properly, commenters should identify confidential information as such when submitted. The guidelines for how ARB handles information designated as confidential can be found on ARB's website (http://www.arb.ca.gov/regact/confid.htm). Comments will be most helpful if they are submitted prior to the workshop so that they may be incorporated into the workshop discussion.

Should you have any questions or comments regarding the workshop or the verification procedure, please contact Dr. David Chou by e-mail at cchou@arb.ca.gov or by phone at (626) 450-6109, or contact Mr. Scott Rowland, Manager, Retrofit Assessment Section, by e-mail at srowland@arb.ca.gov or by phone at (626) 575-6972.

Special Note Regarding the Distribution of Mail-Outs: Interested parties can sign up on the ARB website to receive e-mail notifications with links to new mail-outs from the Mobile Source Control Division. E-mail notification was developed to minimize the number of hardcopies issued for future mailings, and to enable the interested public to receive mailings more expeditiously. If you or your company has access to the internet and you are interested in receiving mailings this way, please follow the instructions found here: http://www.arb.ca.gov/listserv/ms-mailings/ms-mailings.htm. After you have signed up, please contact Ms. Neidy Pinuelas at (626) 350-6454 so that she can remove your address from the hardcopy list.

Sincerely,

//s//

Robert H. Cross, Chief
Mobile Source Control Division

Attachments